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MEDICAL NEWS LETTER

Editor - Captain L. B. Marshall, MC, USN (RET)

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor are they susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Notice

Due to the shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve Medical Officers now on active duty who desire to submit requests for extension of active duty at their present stations for a period of three months or more will be given favorable consideration. BuPers Instruction 1926.1B applies.

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Penicillin Prophylaxis of Gonorrhea

BuMedInst 6222.3B of 25 October 1954 has been interpreted by many as prohibiting the use of oral penicillin for the prevention of gonorrhea. This interpretation is incorrect. Medical officers are at liberty to use this chemoprophylaxis as they desire and should not refuse it to those who request it only on the basis of this instruction.

For the reasons set forth in that instruction, major emphasis on the prevention of venereal diseases should not be focused on chemoprophylaxis, since oral penicillin has been shown to be effective only in the prevention of gonorrhea, whereas the real Medical Department problem is bound up with other venereal diseases.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

Snake Bites

Snake venom may be considered a kind of super saliva which a snake injects hypodermically into his victim by means of his fangs. Like human saliva, it originates in a salivary gland and contains enzymes, though in greater number. These include certain enzymes which digest proteins and fatty substances, and a substance called hyaluronic acid. When the latter is decomposed, spreading of the venom is facilitated.

Venoms vary in their composition according to the kind of snake and different enzymes and substances are found in different kinds of venom. Some of these hemolyze red cells and injure the capillaries allowing blood to escape into the tissues. Histamine may be released by the action of some venoms on tissues. Certain enzymes that are found in venom may clot blood; others may digest fibrin, causing clotted blood to liquefy. Some venoms contain neurotoxins which apparently act directly on the nerves causing paralysis or numbness.

When a person has been bitten by a snake, the one who treats him should know something about the snake and the acutal bite. First, one should know whether the snake involved is venomous or harmless. This can usually be determined by examining the wound and the snake. Poisonous snakes have fangs; therefore, two puncture wounds close together indicate that the snake was poisonous. If the snake had lost one fang, or if the wound were on a small area of skin such as the finger, only one puncture would appear. If the person pulled away from the snake, the puncture wound may have been converted into a laceration.

Poisonous snakes of North America, with one exception, are known as pit vipers and can be identified readily by the presence of a pit between the nostril and the eye. The pit is about the same size as the nostril. Furthermore, the head of these snakes is wider than the neck.

There are two groups of poisonous snakes—the Proteroglypha and the Solenoglypha. The Proteroglypha are represented in this country by the coral snake. Because this snake is small and shy, few people are bitten by it. Occasionally, it may be handled under the false impression that it is harmless. It is predominately red with black bands encircling the body; the bands are bordered by narrow yellow bands. Coral snakes are found in North Carolina and other southern states, especially those along the Gulf of Mexico. Another variety is found between the Rocky Mountains and the Colorado River and south to Mexico and California. It lives underground or under dead leaves. Because few persons are bitten by the coral snake, and because it is difficult to obtain sufficient venom, there is no antivenin.

Pit vipers are in the Solenoglypha group which includes the genera Agkistrodon, Sistrurus, and Crotalus. Agkistrodon mokasen is commonly known as the copperhead and Agkistrodon piscivorus is known as the cotton-mouth or water moccasin. Rattlesnakes, easily identified by their rattles, are included in the genera Sistrurus and Crotalus.

The copperhead may be as long as three feet, and it often has a coppery color. It is found in most of the eastern and southern states, and as far west as Illinois, Kansas, and Texas. Of the 803 people whose snake bites were reported between 1928 and 1929, 308 were bitten by copperheads. None of these bites were fatal, however. The average yield of venom obtained from this snake in one milking is 50 mg.

The cottonmouth moccasin lives in marshy country. In the United States, it is found most commonly in South Carolina, Georgia, Florida, Alabama, Louisiana, and parts of nearby states. Eighty-two people were bitten by this snake between 1928 and 1929; five of them died. The average yield of venom is 120 mg.

Rattlesnakes are probably found in every state of the Union, but certain species are found only in certain areas. Rattlesnakes of all species account for most of the bites and most of the fatalities in this country. Of these, the Crotalus Atrox, or the Texas or western diamond-back rattlesnake, accounts for more bites and fatalities than any other rattler. The average yield of venom is 120 mg.

Anyone who has been bitten by a snake and who seeks treatment will probably be in a great state of apprehension. This emotional state may mask the clinical findings; in fact, some of the symptoms may be due to fear.

With a pit-viper bite, the extremity (the usual site) is very painful, with pain radiating up the limb. The wound often bleeds freely and the surrounding area is swollen and ecchymotic. This swelling often progresses up the limb and may involve the trunk.

The systemic reactions are weakness, giddiness, respiratory difficulty, weak or rapid pulse, vomiting, nausea, paralysis, unconsciousness, fever, diarrhea, and thirst. The wound may become gangrenous. After recovery from the acute symptoms, the wound and the surrounding area may be tender for a while and motion of the adjacent joints may be limited. Usually, the patient recovers completely.

The symptoms and their severity will depend on the amount and kind of venom that has been injected and the promptness and effectiveness of the treatment. The amount of venom that the snake has injected depends on the kind and size of the snake. Also, if the snake has just previously bitten, or if the bite was indirect or through the clothing, the amount of venom injected may be small.

If treatment is to be effective, it must be prompt. A tourniquet should be tied tightly above the wound to occlude the venous and lymphatic drainage, but it should not be tight enough to stop the pulse. This will slow the absorption of the venom into the general circulation. Next, an incision should be made into the wound. If a sterile scalpel is not handy, any sharp instrument can be used—infection can be treated later. If a portion of the fang is found, it should be removed, and suction should be applied to the wound by mouth, breast pump, or by rubber cups which are sold at sporting goods and drug-stores in snake-bite kits. Two syringes may be used by connecting the tips

with a rubber tube. Remove the plunger from one syringe and apply the open end of the syringe to the wound. Traction on the other syringe will produce a vacuum over the wound. The tourniquet should be loosened every 10 or 15 minutes and applied again above the swollen area. Improper application of the tourniquet has resulted in gangrene with loss of the limb.

This treatment should be continued until the patient appears to be out of danger, or until no more fluid can be obtained from the wound. Suction of the wound by mouth is not dangerous if there are no cuts or abrasions of the lips or mouth; venom does not affect intact skin or mucous membrane.

Attempts have been made to neutralize the venom by soaking the wound in potassium permanganate. In the test tube, this oxidizes the venom; in practice, it devitalizes the wound. Venom can be neutralized by antivenin. Only one licensed manufacturer in the United States produces snake antivenin and it contains antibodies against all of the North American snakes, with the exception of the coral snake.

It is not possible to make a serum which, in one dose, will neutralize all the toxic venom which may be injected by a very large snake. Therefore, if the snake is very large, one should give several vials of antivenin. This product is dried and it must be reconstituted with water before it is used. Because it is prepared from horses, it should not be given if the patient is sensitive to horse serum. In any case, it is advisable to test the patient for sensitivity to horse serum by injecting diluted horse serum intradermally before the antivenin is given. If a wheal appears, the serum should be used only after the patient has been desensitized.

After the bleeding has stopped, the wound should be treated as an ordinary puncture wound with the usual precautions against tetanus. There have been cases of recovery from snake bite, followed later by death from tetanus. If the patient has had a previous course of tetanus toxoid, he should have a booster dose of toxoid. If not, tetanus antitoxin should be given.

The patient should be put to rest and treated symptomatically. In some instances, the swelling is marked and covers a large area. If this is associated with thirst, there is the possibility of surgical shock due to loss of body fluids into the swollen area. This should be treated appropriately.

Whisky is not a specific against snake bite and it may do harm by speeding up the absorption of the venom.

It is important to reassure the patient. Snake bites are not necessarily deadly, even with inadequate treatment. Of the estimated 2000 to 3000 snake bites each year in the United States, only 10 to 35% are fatal. Bites of certain species, such as the copperhead, are seldom fatal. But the maximum injection of venom from a large rattlesnake may kill a person within a few hours.

Certain precautions will reduce the incidence and deaths from snake bites. Boots should be worn in areas where snakes are prevalent. A snake-bite kit should be carried when one is in these areas, and one should know how to use it. People who work in zoos and on snake farms where they handle

imported snakes, should have specific antivenin available. (Hornibrook, J. W., Snake Bites: Am. J. Nursing, 56: 754-755, June 1956)

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Tubeless Gastric Analysis

The development by Segal and co-workers, in 1950, of certain cation-exchange resins made it clinically possible to estimate the ability of the stomach to secrete hydrochloric acid without intubation.

Segal has reported a new cation-exchange resin for the tubeless test in which a dye (azure A), instead of quinine, is coupled to the resin amberlite XE-96. As with the older quininium compound, Diagnex, hydrogen ion exchanges with the indicator substance. The released indicator is then absorbed from the gastrointestinal tract and excreted in the urine. The principal advantage of the dye-resin compound over the quininium substance is that results are obtained by a simple rapid colorimetric test on the urine without the use of expensive equipment. With the new resin there is also less likelihood of drug interference with tests results, and significantly fewer false-positive results occur.

In view of the desirability of a simplified tubeless gastric analysis, a study of the efficacy of the azure A compound was undertaken in comparison with the quinine-resin. Published reports have shown that the quinine material differentiated gastric acidity from anacidity, as determined by intubation, in 98% of the 1280 cases.

Consecutive admissions to a general medical ward of the St. Louis Veterans Administration Hospital were subjected to separate tubeless gastric analysis, using the azure A-cation-exchange compound and the quininium material, Diagnex. The two resin tests were done on consecutive days. This offered proximity of the two tests to minimize the recognized periodic variation in gastric secretory function. Tests were repeated after a 1-week interval to resolve conflicting results with the two resins, as well as in those instances of indeterminate results. Most patients with achlorhydric results on both resin tests were intubated. Ward nurses supervised the administration of the testing material and collection of urine specimens. Most cooperative patients followed printed instructions after an explanation of the test by the nurse.

As with the tube technique, a gastric secretory stimulant was given prior to the resin testing material. Caffeine sodium benzoate is inexpensive and is the most convenient oral secretory stimulus to use with this test. Ethyl alcohol may not be used for this purpose because this substance is capable of eluting azure A from the resin. Parenteral histamine may be used in reevaluating results suggestive of achlorhydria with the caffeine stimulant.

During this study, sufficient data for interpretation were obtained in 93 patients, of whom 92 were males. In some of the patients, one or more resin

tests were repeated to clarify original results; therefore, there were 103 tests with the azure A material and 106 with the quinine-resin. In a severely jaundiced patient, the results on one test with each resin were excluded from the final tabulation because excessive bile in the urine prevented interpretation. In evaluating the results, arbitrary categories of "Excellent," "Good," and "Poor" were adopted.

Excellent or Good agreement of azure A and quinine-resin results occurred in 89.2% of initial tests. Repeated examination of selected patients in the Good and Poor categories increased the combined results of the Excellent and Good classifications to 95.7%.

The multiple test procedures reduced the poor results from 10.8% to 4.3%. Three of the 4 patients remaining in the Poor classification did not have repeated resin tests.

Because periodic variation in gastric secretory function occurs, the results which are classified as Good do not reflect upon the accuracy of one test compared with the other. Therefore, it is felt that the combined Excellent and Good categories represent satisfactory agreement of results. On a single-test comparison, there was 89.2% agreement; this increased to 95.7% with repeated-test comparison. It has been shown that the quinine-resin reproduces intubation results in 98% of tests. The findings of this study indicate that the new dye-resin approximates this degree of accuracy. Because false-positive results are infrequent with tubeless gastric analysis, a single azure A-resin test result indicative of free acid is highly reliable. In addition, an achlorhydric result confirmed by more than one test with the dye-resin is reliable evidence of an inability to secrete acid. Although a single negative test frequently indicates persistent achlorhydria, it may occur also with physiological secretory variation and, temporarily, with various disease states, or with inadequate gastric secretory stimulus.

Although some slight modification of laboratory procedures for the azure A-resin may be developed, the present methods are more rapid and less complicated than those for the quininium compound. The test may be readily and reliably done in a hospital laboratory or physician's office by a technician after a brief period of experience with the technique and interpretations. Its principal potential usefulness is as a screening procedure for achlorhydria when a qualitative result is all that is required. (Sievers, M. L., Gieselman, R. V., Tubeless Gastric Analaysis - Evaluation of a Technic Using a Dye-Resin Compound: Am. J. Digest, Dis., New Series, 1:241-248, June 1956)

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Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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The Problem of Established Atrial Fibrillation

This article reviews the problem of atrial fibrillation briefly and makes recommendations as to which patients should be considered candidates for conversion to normal rhythm. The advantages to be gained by the establishment of normal sinus rhythm and the dangers, particularly as related to quinidine toxicity, are discussed. A series of 30 cases, who were given quinidine in an effort to establish normal rhythm, are reported.

Embolic phenomena frequently occur in patients with atrial fibrillation. This arrhythmia was reported present in 90% of 194 patients with rheumatic heart disease who had peripheral emboli. Emboli were the cause of death in approximately 10 to 20% of patients with rheumatic heart disease. Sudden death is more common in cardiac patients with atrial fibrillation than in those with normal rhythm.

There are, therefore, good reasons to attempt to convert patients with atrial fibrillation to normal rhythm, but the dangers which accompany the conversion must be weighed against the advantages to be gained. The dangers are due to the change from atrial fibrillation to normal rhythm and to the toxicity of the drugs used to effect conversion. The danger due to the change from atrial fibrillation to normal rhythm is that of embolization at the time of, or shortly after, sinus rhythm develops.

Quinidine is most frequently employed to effect conversion, although Pronestyl has also been used. Similar toxic effects may be produced by these two drugs, including gastrointestinal manifestations, central nervous system reactions, respiratory failure, blood dyscrasias, drug fever, skin eruptions, and, of particular importance, various arrhythmias and conduction system abnormalities. Atrial flutter with increase in ventricular rate, nodal rhythm, ventricular ectopic beats, and ventricular fibrillation have been reported following administration of these drugs.

One of the problems in the management of atrial fibrillation is the incidence of relapse. This probably depends not only on the continuous administration of quinidine, but also on the age of the patient and the underlying heart disease. Patients who receive adequate maintenance doses of quinidine are less apt to relapse than those who do not. Relapse is more common in patients over 50 years of age and in those with severe heart failure; it is also reported to be more frequent in degenerative than in rheumatic heart disease.

The author considers it imperative to emphasize that patients who are candidates for conversion should be under constant observation in a hospital and should be seen by a physician before each dose of quinidine is given, and should have frequent electrocardiograms taken. If arrhythmias occur, or if the intraventricular conduction time increases more than 25%, the drug should be discontinued.

Suggestion is made that the following patients who have atrial fibrillation should be considered candidates for conversion: (1) patients with a history of

embolic episodes; (2) patients with heart failure not satisfactorily controlled with digitalis, sodium restriction, and diuretics; (3) patients with recently acquired atrial fibrillation; and (4) patients without other evidence of heart disease who give a history of embolic episodes and who have heart failure or cardiac enlargement.

Further suggestion is made that the following patients not be subjected to quinidine therapy in an attempt to establish normal rhythm: (1) patients with failure well controlled by digitalis and sodium restriction, particularly elderly individuals; (2) patients with atrial fibrillation without other evidence of heart disease who have had the arrhythmia for a year or more and who do not give a history of embolic episodes, heart failure, or cardiac enlargement. The heart rate, however, should be kept within a satisfactory range with digitalis. Reports indicate that such patients who do not develop failure within one year are not likely to do so. (Beckwith J. R., et al., The Problem of Established Atrial Fibrillation: Am. J. Med. Sci., 231: 519-529, May 1956)

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Pseudomembranous Enterocolitis

Pseudomembranous enterocolitis (diphtheritic enteritis, antibiotic enterocolitis, staphylococcal enterocolitis, acute necrotizing enteritis), once regarded as a rare postmortem finding, is being encountered clinically and at autopsy with increasing frequency. Although the entity was described pathologically long prior to the antibiotic era, there is little doubt that the appreciable increase in incidence of the disease coincides with the widespread use of broad spectrum antibiotics.

The increasing frequency and overwhelming course of pseudomembranous enterocolitis make it mandatory that the diagnosis be established earlier and more often. The first step is an obvious one, that is, to become cognizant of the incidence of the varied clinical manifestations of the entity. When suspected, a stool smear and culture (on blood sugar media, for the growth of other organisms on the usual culture media will often suppress Micrococcus pyogenes which is the usual offender) is indicated. Perhaps the ideal precaution would be to make fecal smears on all patients receiving large or prolonged doses of antibiotics, particularly those of the tetracycline group or the combination of penicillin and streptomycin. Such smears would show a striking absence of the gram-negative flora and a preponderance of gram-positive cocci in patients with pseudomembranous enterocolitis.

Study of the autopsy cases, personal clinical experience with the disease, and review of the literature would indicate that pseudomembranous enterocolitis most often manifests itself as one of the following clinical pictures (although the underlying pathology is the same):

Choleric Type - characterized by profuse watery diarrhea, nausea, vomiting, periumbilical cramps, abdominal distention, and fever. If appropriate

therapy is not vigorously instituted, irreversible shock with death will ensue.

Ileus Type - in which increasing abdominal distention, not responding to nasogastric suction removing copious amounts of greenish brown fluid, nausea, and vomiting (despite suction), and respiratory embarrassment from increasing distention are evident. Diarrhea may be present, but often is not. Shock will occur, but is usually not as dramatic as in the choleric type.

Precipitous Shock Type - Occasionally, the more common symptoms of diarrhea, abdominal distention, nausea, and vomiting are absent or overlooked because of their minor nature. One is suddenly confronted with a patient in mild to moderate shock with marked hypotension, tachycardia, pallor, sweating, and, not infrequently, dyspnea. The onset is usually dramatic and suggests the possibility of pulmonary embolism or coronary thrombosis. The increasing frequency of pseudomembranous enterocolitis would warrant its being considered when such a picture is presented postoperatively.

The most important step in therapy would be to decrease the incidence of pseudomembranous enterocolitis by administering antibiotics only when specifically indicated and choosing them in knowledge of their potential complications.

The "routine" use of antibiotics following major surgery to avoid wound infection is a particularly dangerous practice. Such therapy flirts with a serious, often fatal, complication to avoid an infrequent, usually inconsequential wound infection.

The second most important therapeutic consideration is earlier diagnosis, for only then can death be avoided. A healthy suspicion of the possibility will lead to periodic stool smears and cultures and to be aware of changing intestinal flora and avoid overgrowth of virulent organisms.

In the management of the clinically established case, the following therapeutic recommendations are important:

1. Discontinuance of the antibiotics being given.
2. Antishock measures.
3. Corticotropin or cortisone.

The usual supportive therapy, such as gastrointestinal suction, tracheobronchial toilet, and so on, is of utmost importance in these seriously ill patients. (Johnston, J.H., Jr., et al., Pseudomembranous Enterocolitis: Surgery, 39: 975-981, June 1956)

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Au^{198} in Control of Malignant Effusions

Physicians are confronted with the problem of palliation in all patients with advanced malignancy. One of the most distressing complications of advanced cancer is the intractable accumulation of fluid in one of the serous

cavities. Clark reported significant effusions (over 1000 cc.) in 29% of 266 consecutive autopsies on men with malignant disease.

The intracavitary use of radioactive isotopes for the control of malignant effusions was first employed in 1945 by J. H. Müller who used Zn^{63} prepared in a Cyclotron. In 1950, the same author reported encouraging results in the inhibition of fluid formation in 8 patients by the intraperitoneal injection of radioactive colloidal gold. This report stimulated more clinical trials, and since 1950, numerous reports have further attested to the efficacy of this isotope in controlling the formation of fluid due to malignant diseases of the serous cavities. This palliative use of radiogold during the past 4 years has caused it to rise from a rather obscure position to second rank among the short-lived radioactive isotopes in terms of millicuries produced each week.

In treating these malignant pleural or peritoneal effusions, the patients should be selected carefully for optimal results. Ideally, the patients should be (1) those in whom the fluid formation has become a troublesome problem; (2) those in whom the metastases are small serosal seedlings rather than large tumor masses; and (3) those without severe constitutional effects, i.e., cachexia, anemia, leukopenia, et cetera.

As it is solely a palliative measure and not one to increase life expectancy, only those patients with troublesome fluid formation, which is depleting the already low protein stores, should be selected for this type of therapy. Because the radiation effect is primarily a surface phenomenon, patients with large tumor masses are usually not effectively treated with radiogold as the large tumors are insufficiently irradiated. In those patients with severe constitutional effects, the radioactive gold will often produce a rapid cessation of the fluid formation, but sometimes will speed the downhill course.

From an analysis of 58 cases of malignant pleural and peritoneal effusions treated with radioactive colloidal gold the authors were able to draw several definite conclusions:

1. Intracavitary radiogold is of definite benefit in the relief of troublesome malignant effusion. Without careful selection, 62% of the patients treated were rendered free of troublesome fluid accumulation for an average duration of 5 months.

2. The best results in the management of troublesome pleural or peritoneal effusions were obtained in those patients without visible or palpable metastases.

3. Patients with palpable masses or in the terminal stages of illness may develop intestinal obstructive symptoms following intracavitary radiogold therapy.

4. Patients with severe constitutional effects, such as marked weight loss, severe anemia, et cetera, may run a rapid downhill course following intracavitary radiogold therapy.

5. A satisfactory result may occasionally be obtained in the patient with a large palpable mass and malignant effusion by a combination of intra

cavitary radiogold and external irradiation to the large mass, particularly if the primary tumor is ovarian in origin.

6. The palliative effect of radioactive gold in malignant effusions can be increased with a more careful selection of patients.

(Dennis, J. M., et al., Radioactive Colloidal Gold in the Control of Malignant Effusions - Report and Analysis of 60 Patients: Am. J. Roentgenol., 75: 1124-1128, June 1956)

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IPP-Aerosol Therapy in Pediatrics

For the past 3 years, the Pediatric Research Department of the Lovelace Foundation has been engaged in investigative and clinical studies of the use of intermittent positive pressure breathing (termed IPPB) therapy in the field of pediatrics. Studies in infant resuscitation have proved its worth in (1) expanding the non-expanded lungs of newborns who do not breathe at birth; (2) assisting in the correction of partial atelectasis and anoxia; and (3) promoting bronchial drainage and preventing infection and resorption atelectasis.

Children ranging in age from 1 to 17 years and suffering from various respiratory conditions were included in the investigative studies. Routine studies consisted of thorough history and physical examination, complete blood count, throat or sputum culture with sensitivities, x-ray films of the chest and sinuses, and allergenic skin tests.

Pulmonary function tests included studies of the air flow, lung volumes, and intrapulmonary mixing and distribution. These tests gave the required objective information, because 99% of pulmonary impairment in children is in ventilation with less emphasis on diffusion. A ventilation chart was devised to simplify factor-impairment-cause relationship.

Obstructive, restrictive, and dynamic impairment was easily and rapidly visualized by pneumotachographic studies, employing a flow orifice as previously reported. Timed vital capacities gave an accurate estimate of the extent of obstruction. Spirograms during quiet breathing and maximal inspiration and expiration (vital capacity) provided information on the bellows function of the lungs and chest (restrictive impairment). Residual volume determined by the open circuit method and combined with the spirogram provided total lung capacity and relative subdivisions.

It is recognized that many allergic conditions in children may be associated with emotional problems. Therefore, many of these children were referred to the Clinical Psychology Department for aid.

To simplify treatment and to promote interest and continuity of therapy, children with respiratory conditions received their IPPB in a special room called the Jet Room, so named by themselves, and from the ceiling of which

hang models of jet airplanes which they have constructed. Each child is a member of the Jet Room Club and his specific therapy is transcribed on the back of his membership card.

Aids to IPPB Therapy

Climate: The low humidity of the Southwest helps to dry up bronchial secretions and the lower air density in Albuquerque reduces respiratory work.

General: Adequate diet, proper clothing, prevention of fatigue, avoid-spasm with nebulized bronchodilators, mechanical clearing of the respiratory infections, avoidance of respiratory irritants (dust, smoke, allergenic irritants), and immediate treatment of respiratory infections.

Specific: Expectorants to promote bronchial drainage, relief of broncho-spasm with nebulized bronchodilators, mechanical clearing of the respiratory tract by coughing or postural drainage, antihistamines, combination medications (such as Tedral), hormones (ACTH, Cortisone) and suppositories (Aminophylline, Tedral).

The benefits which children derive from IPPB therapy are evaluated subjectively by symptomatic and physical changes. Of prime consideration in symptomatic improvement are changes in appetite, breathing character, cough or wheezing, fatigability, infections, medications required, and sleeping. Physical changes observed are alertness, color, vigor, weight, type and quality of respirations, change in thoracic or other configurations, exercise tolerance, breath sounds, pulse and blood pressure, and temperature.

The change in routine laboratory evaluations—blood count, decrease in bacterial organisms, change in x-ray films of chest and sinuses, and change in allergic sensitivities—offer some objective measures of improvement. The most impressive objective observations come, however, from comparative "before and after therapy" pulmonary function studies.

A method for the use in pediatrics of intermittent positive pressure breathing (IPPB) therapy with supplementary use of bronchodilator drugs, antibiotic drugs, a wetting agent, and an enzymatic agent is discussed.

A plan of investigation for studies in children to determine the effectiveness of such therapy is reviewed.

A ventilation chart is proposed to simplify the factor-impairment-cause relationship of pulmonary function.

The authors have shown that IPPB-aerosol therapy in pediatrics has proved to be an adjunctive, a curative, and a prophylactic type of treatment in children with asthma, chronic coughs, bronchiectasis and bronchitis, cystic fibrosis of the pancreas, sinusitis, and miscellaneous respiratory conditions.

Significant reversible changes, not heretofore seen in IPPB therapy in adults, have been noted in some children with chronic emphysema, with as much as 50% decrease in the residual volume, 33% increase in vital capacity,

and 25% decrease in nitrogen clearance ventilation. (Goddard, R. F., Luft, U. C., Intermittent Positive Pressure-Aerosol Therapy in Pediatrics: Dis. Chest, XXIX: 616-630, June 1956)

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Groin Dissection

The place of groin dissection in the surgery of cancer is subject to wide variation in the conception of many surgeons. On the assumption that cancer cells principally pass from the primary lesion to the regional lymph nodes by embolic phenomena, it seems logical to remove those lymph nodes when the primary lesions can be controlled. Groin dissections are designed to remove the first echelon nodes of primary carcinomas draining to them.

Superficial or simple groin dissection removes the lymph nodes in the femoral triangle. Radical groin dissection proceeds from the point at which the simple operation ends and consists of removal of the external iliac, hypogastric, obturator, and uterine nodes, accomplishing what is often referred to as "iliac lymphadenectomy."

In general, radical dissection is preferred over simple dissection. The simple procedure may be indicated in the aged, as a palliative procedure in selected cases of advanced disease when it is necessary to perform bilateral dissection in conjunction with block excision of a primary lesion, when previous pelvic surgery makes iliac lymphadenectomy impractical, or in other outlined instances. Iliac lymphadenectomy alone may be a very useful operation in cases of cancer of the bladder, uterus, or cervix when the primary lesion has been controlled and there is reason to believe malignant invasion of the regional lymph nodes has occurred. First, the six postulates of Pack and Rekers for a successful curative groin dissection should be listed: (1) The primary cancer, wherever located, should be controlled or controllable and should be treated first. (2) There should be no clinical evidences of metastasis through the blood stream. (3) The lymph stream must be centralward without evidence of blockage and retrograde extension. (4) It should be technically possible to excise all lymph nodes involved or suspected of becoming involved in the immediate neighborhood. (5) There must be some possibility of interruption of the lymphatic spread of cancer by an excision of these nodes. (6) Evidence should be present that the cancer has drained only to the regional groups of nodes to be attacked in the groin dissection.

Epidermoid carcinoma of the skin of the lower extremities with clinically involved nodes in the groin required radical groin dissection on the involved side. Radical dissection in the absence of clinically involved nodes is debatable.

Groin dissection is always indicated in cases of melanoma of the lower extremities, if resection is possible. Whenever possible, the removal of the

primary lesion and groin dissection should be performed as block excision and dissection in continuity. However, when the primary lesion is far removed from the groin, it is best to delay groin dissection for several weeks if there are no nodes clinically palpable. In this way it is believed that the regional nodes may act as a filter basin. If the nodes are enlarged, they should be removed as soon as possible after control of the primary lesion.

Skin Malignancies of the Lower Abdomen. The ilioinguinal glands drain the lower abdominal wall from the level of the umbilicus. Groin dissections are indicated in this area under the same conditions as the lower extremities.

Cancer of the Vulva and Clitoris. The lymphatic drainage is bilateral and necessitates bilateral groin dissections. The principle of block excision and dissection in continuity can be carried out by vulvectomy and superficial bilateral groin dissections if there is no clinical evidence of metastasis. This may be performed as a single procedure in the patient considered a good risk. If there is evidence of metastasis, the radical procedure should be performed in stages.

Carcinoma of the Anus and Perineum. The lymphatic drainage from this area is primarily to the superficial groin nodes. The deeper nodes are involved from the superficial nodes rather than directly from the anus. Another modifying factor is that abdominal perineal resection for the control of the primary lesion makes iliac lymphadenectomy technically a difficult and unsatisfactory procedure. In general, bilateral superficial groin dissection, in stages, is the preferred method of handling groin nodes. Whether prophylactic dissection is justified depends upon the degree of malignancy of the primary lesion, the patient's general condition, and the likelihood of the patient to cooperate with careful follow-up.

Miscellaneous. This group includes sarcomas of the extremities and other malignancies of the areas draining to the groin. When the primary lesion is controllable and only regional lymphatic metastasis is evident, groin dissection is indicated.

Contraindications. Groin dissection is contraindicated in the following instances: (1) distal metastasis; (2) failure to control the primary lesion; (3) fixation of malignancy to structures which cannot be removed, such as the femoral artery; (4) extension of disease beyond the limits of resectability; and (5) poor surgical risks who might not tolerate the operation. (Tate, R. C., Groin Dissection: Am. J. Surg., 91: 929-933, June 1956)

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Functional Uterine Bleeding

Although functional uterine bleeding is frequently discussed and extensively written about, it is still rather poorly understood. The generally

accepted definition of functional uterine bleeding is "abnormal uterine bleeding which occurs with the lack of any demonstrable pelvic disease, i. e., not demonatrated on bimanual examination or speculum examination." This definition has some pitfalls because pathological conditions may be present and yet not be revealed by such examination. In many cases, further diagnostic studies, such as curettage, biopsy, Papanicolaou smears, culdoscopy and laparotomy will reveal organic disease, thus, contradicting a diagnosis of functional uterine bleeding in a given case.

This article reviews 92 verified cases of functional uterine bleeding from a clinical and pathological standpoint. In the clinic where this study was made, the diagnosis of functional uterine bleeding is made on the history and the lack of pelvic findings to account for the bleeding. The authors' policy requires that all patients over 35 years of age have a curettage and biopsy before the final diagnosis of functional bleeding is made. In patients under 35, the diagnosis can be made on the history and pelvic examination, and these patients can be treated medically if the bleeding is not too profuse or of unduly long duration. Red blood cell count and hemoglobin levels are checked in all patients who receive medical treatment on an outpatient basis. According to the present policy, an endometrial biopsy is obtained prior to the institution of therapy in order to learn more about the endometrial pictures associated with functional uterine bleeding.

Although the etiology of functional uterine bleeding is not completely understood, it is believed that some form of pituitary-ovarian imbalance is probably the cause, i. e., the ovary is stimulated in a very irregular fashion by the gonadotropes. This causes a disorganized output of ovarian hormones, thus stimulating the endometrium in an irregular manner. Because the pituitary is under the influence of the hypothalamus, it is believed that, in many cases, emotional factors may be responsible. Since the endometrium is the target of this endocrine imbalance, abnormal bleeding is merely a symptom of an endocrine dysfunction.

The literature offers many widely variant forms of therapy for functional uterine bleeding, all with approximately the same results as to outcome. The number of endocrine plans recommended for the treatment of functional bleeding is almost endless, and about the only difference between them is that some are more complicated and expensive than others. The very fact that sedation alone, or in combination with empiric thyroid, gives good results emphasized the fact that perhaps most patients with functional uterine bleeding cure themselves in time and that all the complicated endocrine plans really do nothing but temporize until spontaneous cure appears. Curettage, which offers a reasonably good cure rate, certainly has no effect on any endocrine dysfunction which may be present. From the foregoing, it seems logical to conclude that the problem in treating the patient with functional uterine bleeding is to provide some method of immediate or reasonably quick hemostasis, and then allow the patient to undergo spontaneous cure.

In this series, the ultimate outcome in the patients treated by curettage and cyclic estrogen therapy is about equal. Twenty-seven of 46 patients remained well for 3 months following curettage, while 29 of 44 patients remained well for 3 months following cyclic estrogen therapy. The slight difference is not deemed significant because of the size of this series. Of interest is the fact that 42 of the 46 patients had immediate good results from curettage, while 32 of 44 patients had immediate good results from cyclic estrogen. Of these 32 patients, 29 remained well for 3 months, in contrast to 27 of 42 patients of the curettage group who remained well for 3 months.

Thus, it appears that curettage offers better immediate results than cyclic estrogens, with the ultimate cure rate about the same. It seems, however, that if the patient responds immediately to cyclic estrogens, her' chances of remaining well are better than those of a similar patient who is curetted. Further investigation along these lines is now being carried out.

The fact that 17 of the 24 patients given sedation and thyroid were apparently cured speaks well for the fact that, given time, most of these patients will have a spontaneous cure.

The authors believe that the main problems regarding functional uterine bleeding are: (1) to rule out organic pathological conditions, employing curettage in all patients 35 years of age and over, and in younger women where the diagnosis is in doubt; (2) to provide some means of immediate, or reasonably immediate, hemostasis. It is felt that, given time, most patients will then probably undergo spontaneous cure.

When endocrines are used to treat functional uterine bleeding, it is the authors' opinion that the simple and inexpensive type of therapy probably works just as well as the more complicated ones. (Jacobs, W. M., Lindley, J. E., Functional Uterine Bleeding - A Review of Ninety-Two Cases: Am. J. Obst. & Gynec., 71: 1322-1327, June 1956)

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From the Note Book

1. Rear Admiral B. W. Hogan, Surgeon General of the Navy, attended inauguration ceremonies of the new Peruvian Medical Center held on July 4, 1956, at Lima, Peru. Admiral Hogan accompanied Admiral Arleigh Burke, Chief of Naval Operations.

The new Peruvian Medical Center, modeled after the Naval Hospital at Beaufort, S. C., is located between Lima and Callal. (TIO, BuMed)

2. Rear Admiral B. E. Bradley, Deputy and Assistant Chief of the Bureau of Medicine and Surgery, accompanied The Honorable F. B. Berry, Assistant Secretary for Defense (Health and Medical) and participated in dedication ceremonies of the Kindley Air Force Base Hospital at Bermuda, B. W. I., June 21, 1956. (TIO, BuMed)

3. At the Annual Convocation of the American College of Chest Physicians, fellowships were conferred on Captains J. F. Chace, MC, and B. L. Canaga, Jr., MC USN. (TIO, BuMed)

4. Captain J. A. English, DC USN, Dental Science Liaison Officer, Office of Naval Research Branch Office, London, spoke to the faculty and students at the Denmark Dental School in Copenhagen, Denmark on May 8, 1956. His presentation concerned the general problem of chelation as related to catalysis; the occurrence of chelation in important biological compounds; some uses of chelation in biochemistry and everyday life, and a discussion of the physical-chemical character of chelate compounds. He supplemented his talk with a film showing the effect of using chelation principles in studying the fine structure of teeth. (TIO, BuMed)

5. Thorotrast, a radiopaque agent which is known to be radioactive, has been shown by experimental work to be carcinogenic. The A. M. A. Council on Pharmacy and Medicine and other authorities have repeatedly warned against the use of thorotrast because of this danger. The authors conclude that thorotrast should not be used at all in those instances where a satisfactory alternate is available, especially in such procedures as retrograde pyelography, arteriography, mammography, myelography, et cetera. (Am. J. Roentgenol., June 1956; E. Budin, M. D., J. Gershon-Cohen, M. D.)

6. The true incidence of gonorrhea in the United States is unknown. Interest in research in gonorrhea is at an all-time low in this country. To gain the knowledge needed to press the battle against the gonococcus, there must be a reawakening of interest in gonorrhea among research workers, as well as among those who provide the funds. (Pub. Health Rep., June 1956; I. L. Schamberg, M. D.)

7. Forty-two patients have been treated with p-bis (2-chloroethyl) amino-phenylbutyric acid (CB 1348). These include 24 patients with Hodgkin's disease, 10 patients with monocytic leukemia, 3 patients with chronic lymphatic leukemia, 1 patient with lympho-sarcoma, 1 patient with acute lymphatic leukemia, 1 patient with mycosis fungoides, 1 patient with multiple myeloma. It is concluded that CB 1348 is of value in the treatment of selected patients with Hodgkin's disease as a supplement to x-ray therapy. (Arch. Int. Med., June 1956; B. A. Bouroncle, M. D., et al.)

8. In the majority of instances a solitary peripheral mass in the lung will prove to be benign if it contains roentgenologically demonstrable calcium. However, the possibility that the tumor may be malignant must be kept in mind. It should never be dismissed as insignificant and must be kept under observation by means of semiannual or annual roentgenologic examinations. (Mayo Clin., Proc. Staff Meet, 30 May 1956; C. A. Good, M. D., J. R. McDonald, M. D.)

American Board of Obstetrics and Gynecology

Following the Annual Meeting and completion of the Part II Examinations of the American Board of Obstetrics and Gynecology, the following statistics were compiled:

Out of the total number of 471 new and reopened applications this year, 108 were postponed by the Credentials Committee. Four hundred and thirty candidates took the Part I Examinations; of 48 failures in this group, 25 were failures in the Written Examinations and 23 were in Case Reports. Of the candidates who participated in the Part II Examinations, 317 were certified and 99 failed.

Applications for certification for the 1957 Examinations are now being accepted. All candidates are urged to make such application at the earliest date possible. Deadline date for receipt of applications, new and reopened, is October 1.

Current Bulletins outlining present requirements may be obtained by writing to the Secretary's office: Robert L. Faulkner, M.D., American Board of Obstetrics and Gynecology, 2105 Adelbert Road, Cleveland 6, Ohio.

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Board Certifications

American Board of Anesthesiology

LT George R. Hamilton MC USNR (Inactive)

American Board of Dermatology and Syphilology

LT Harold L. Colburn, Jr. MC USNR (Inactive)

American Board of Internal Medicine

CDR Kenneth P. Bachman MC USN
LCDR William T. Bailey MC USNR (Active)
LTJG Lloyd S. Call MC USNR (Inactive)
LT Alfonso B. Falcone MC USNR (Active)
LT Arnold F. Hilfer MC USNR (Active)
CDR John F. Loughlin MC USNR (Inactive)
LCDR Stephen R. Mills, Jr., MC USN
LT Frederick A. Schroeder MC USNR (Inactive)
CAPT Francis G. Soule, Jr. MC USN

American Board of Neurological Surgery

LTJG Alfred R. Kessler MC USNR (Inactive)

American Board of Obstetrics and Gynecology

LTJG Joseph F. Arico, Jr. MC USNR (Inactive)

American Board of Obstetrics and Gynecology (continued)

LT Ross F. Bass MC USNR (Inactive)
LT Robert H. Longwell MC USNR (Inactive)
LCDR Harvey K. Mechanik MC USNR (Inactive)

American Board of Ophthalmology

LTJG Walter Friedland MC USNR (inactive)
LTJG Duval B. Jaros MC USNR (Inactive)
LCDR Frederick W. Kraft MC USNR (Inactive)
CDR Paul H. Pettit MC USNR (Inactive)

American Board of Otolaryngology

LTJG William "C" Morgan, Jr. MC USNR (Inactive)
LTJG Robert L. Ralston MC USNR (Inactive)
LTJG Charles J. Watkins MC USNR (Inactive)

American Board of Pathology

LT William M. Berton MC USNR (Active) Pathologic Anatomy
CDR Robert M. Dimmette MC USN (Pathologic Anatomy)
LCDR Robert C. Hastedt MC USN (Pathologic Anatomy and Clinical Pathology)
LCDR Donald J. MacPherson MC USN (Pathologic Anatomy)

(Listing of Board Certifications to be continued in the next issue)

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BUMED NOTICE 7303 25 May 1956

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: CH-2 to BuMed Instruction 7303.4A, Subj: Funds under the appropriation Medical Care, Navy, for ships and fleet operating units

Encl: (1) Listing of Quarterly Target Amounts by Vessel and Unit Type, Fiscal Year 1957
(2) Accounting Data Applicable to Fiscal Year 1957

This notice provides addressees with subject change and further clarifies authority to exceed quarterly target amounts.

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BUMED NOTICE 1510 28 May 1956

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical/Dental Personnel Regularly Assigned

Subj: Training available to enlisted members of the Hospital Corps

Ref: (a) BuMedInst 1510.4, Subj: Hospital Corps personnel; training and utilization of

This notice provides additional information regarding training available to enlisted members of the Hospital Corps.

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BUMED NOTICE 6600 29 May 1956

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Dental Corps Personnel Regularly Assigned

Subj: Dental Service Report (DD Form 477), Med-6600-2

Ref: (a) BuMedInst 6600.1 of 16 Nov 1953, same subj.

This notice advises addressees to enter as many procedures as possible in printed categories rather than blank spaces of the Dental Service Report (DD Form 477)

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BUMED INSTRUCTION 5202.2A 18 June 1956

From: Chief, Bureau of Medicine and Surgery
To: All BuMed Managed Activities

Subj: Civilian Personnel Services Work Measurement Program

Encl: (1) Definitions and reporting instructions for subject program on Form NavExos-3211 (1-56), Industrial Relations Function Workload and Staffing Report (Reports Symbol Exos-5202-1)

This instruction forwards as enclosure the definitions and reporting instructions for the revised Civilian Personnel Services Work Measurement Program.

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DENTAL SECTION

Twenty Dental Corps Applications Processed in May

During May 1956, 16 applications for appointment in the Dental Corps of the Regular Navy were processed by the Naval Examining Board in the Bureau of Medicine and Surgery; another 4 applications were processed during the month by the Augmentation Board of the Bureau of Naval Personnel. This is an encouraging first step towards accomplishing the purpose of the Medical and Dental Officers Procurement Act of 1956 to increase the strength of the Regular Navy Dental Corps to two-thirds of the officers on active duty. Reserve Dental officers on active duty, who desire careers in the Navy, should submit letter requests for consideration to the Chief of Naval Personnel (Pers-B6221) via their commanding officers. Applicants on inactive duty should apply at the nearest Office of Naval Officer Procurement.

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Use Your Officer Data Card!

All officers are required to submit annually, on 1 August and when significant changes occur, a completed Officer Data Card (NavPers-340) to the Bureau of Naval Personnel. This card is forwarded by BuPers to the Personnel Branch of the Dental Division, Bureau of Medicine and Surgery, where it is used for planning your new duty assignment. The importance of filling out this card accurately cannot be overemphasized. Particular thought should be devoted to indicating duty preferences of the second and third choices, as frequently billet vacancies are not available in the geographical area of first choice. Although every effort is made to assign dental officers to duties of their preference, it is necessary to meet the world-wide dental needs of the Navy and Marine Corps. Thus, it is likely that officers will occasionally receive assignments which were not listed as a preference on their Officer Data Card.

Use the "Remarks" box to your advantage by noting any special circumstances, both professional and domestic, which have a bearing on your assignability. When changes occur, submit a new card.

Officers Assigned to Civilian Dental Schools

Nine Naval Dental officers were recently selected for long courses (one year) at civilian dental schools. Their assignments follow:

Oral Surgery

CDR Robert A. Middleton DC USN
Georgetown University Graduate School

LT Harry J. Dennis DC USN
Georgetown University Graduate School

LCDR Howard S. Kramer DC USN
University of Pennsylvania, Graduate School of Medicine

Prosthodontics

CAPT William A. Newman DC USN
Ohio State University, College of Dentistry

LT Victor P. Knapp DC USN
Tufts College Dental School

Periodontics

CAPT Charles T. Pridgeon DC USN
University of Pennsylvania, Graduate School of Medicine

LT Walter N. Johnson DC USN
Ohio State University College of Dentistry

LCDR George Ulrich DC USN
Ohio State University College of Dentistry

Endodontics

LT Edward C. Penick DC USN
University of Alabama, School of Dentistry

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Senior Dental Student Program for Fiscal Year 1957

Orders are being issued to 40 junior dental students to enter on active duty as Ensigns 1995 during their senior year. These 40 students were selected from 100 who originally applied; 87 were Ensigns 1995, 13 were civilians. Ten students were selected as alternates. The 40 students agreed to accept a superseding appointment as LT(JG) in the regular Navy. Their names follow:

Ensigns 1995 for Fiscal Year 1957:

Allen, Robert William	University of Washington
Barlow, Doil Earl	University of Nebraska
Butler, George Revis, Jr.	Emory University
Brewster, Jerry Glenn	University of Tennessee
Comcowich, William Lawrence	Creighton University
Cunningham, Charles Joseph	Marquette University
Diem, Charles Robert	University of Pittsburgh
Edwards, Richard Cunliffe	University of Pittsburgh
Fenster, Robert Keith	University of Nebraska
Gherardi, Roy Frank	University of Maryland
Gholson, Dan Frank	University of Iowa
Good, Richard James	University of Detroit
Grove, David Malley	College of Physicians & Surgeons, New York
Hands, Dale Franklin	Northwestern University
Harland, Robert Joseph	University of Oregon
Heckel, Robert Dale	Western Reserve University
Hill, Robert LeRoy	Medical College of Virginia
Jayne, John Harris	University of Alabama
Kimbrough, Harris McDonald	Baylor University
McDonnel, William John	Emory University
McGary, Charles William	University of Michigan
Mielke, Dean Talbot	Marquette University
Miller, James Earl	Temple University
Mouritsen, Robert Elias	University of California
Newell, William John	Northwestern University
Olson, Fred Allen	St. Louis University
Page, Foy Christopher	Maryland University
Peck, Robert Brantley	Maryland University
Porter, William Joseph	University of Pittsburgh
Russell, David Terry	Ohio State University
Ryan, Joseph Patrick	St. Louis University
Sipe, Kenneth Dale	University of Oregon
Sherrill, Claude Adolphus, Jr.	University of North Carolina
Stout, William Andrew	University of Maryland
Tietzer, Herbert Otto, Jr.	Indiana University
Tibbetts, Van Roger	University of Southern California
Trusz, Edward John	Loyola University (Chicago)
Westerhoff, Warren Richard	Loyola University (Chicago)
Whited, Don Herman	Baylor University
Wright, Henry Gordon, Jr.	Baylor University

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Dental Interns for Fiscal Year 1957

Dental Interns recently selected for participation in Dental Intern Training Program for fiscal year 1957 have been assigned to dental teaching facilities as follows:

U.S. Naval Hospital, Chelsea, Mass.

Brown, Kenneth Edward
Weikert, Donald Collis

U.S. Naval Hospital, St. Albans

Coombs, Paul Spencer
McLeod, Carlton Joseph

U.S. Naval Hospital, Philadelphia

Baker, Ronald Dale
Williams, Sherman Luther

U.S. Naval Hospital, Portsmouth

Eichel, Frederick Pecht
Scharpf, Herbert Otto

U.S. Naval Hospital, San Diego

Parent, Clarence Bernard, Jr.
Wyne, Gene Kenyon

U.S. Naval Hospital, Camp Pendleton

Albers, Delmar Dean
Kieny, Richard Joseph

U.S. Naval Hospital, Corona

Braswell, Jack Guy
Valasek, Arden Dale

U.S. Naval Hospital, Oakland

Lattner, Richard Alfred
Mainous, Elgene George

U.S. Naval Hospital, Great Lakes

Grodon, Jim Dudley
Marsalek, Daniel Eugene

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Enlisted Instructors Needed for Dental Technicians Schools, Classes A, B, and C

Instructors are needed for the Advanced General and Prosthetic Class B Schools at the Naval Dental School, Bethesda, Md. It is desired that applicants for this duty be serving in pay grade E-7. Instructors are also needed in the Class A and Class C Schools at Bainbridge, Md. Applicants for this duty may be serving in pay grades E-5 through E-7. Applications should be submitted in accordance with BuPers Instruction 1306.22B.

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MEDICAL RESERVE SECTION

New Requirements for Promotion

In the Medical News Letter, Volume 27, Number 12, June 22, 1956, pertinent parts of BuMed Instruction 1416.3 were reproduced to inform inactive Reserve Medical Department officers of the current plan to determine professional fitness for promotion. Space did not permit publishing the requirements for all ranks and categories in one issue, therefore, it is planned to publicize further portions of this instruction in succeeding issues until all ranks and categories are covered.

Subjects in which exemptions will be required:

Fiscal Year in Which Selected	LT to LCDR - Medical Corps, Inactive
1956	Any two subjects in the Executive Area
1957	All subjects in the Executive Area
1958	All subjects in the Executive Area plus any two subjects in the Operations Area
1959	All subjects in the Executive and Operations Areas
1960	All subjects in the Executive and Operations Areas plus one subject in the Technical Area
1961 and Succeeding Years	All subjects in all Areas

Part I - Executive Area

Subject	Correspondence Course Exemptions	School Exemption
1. Administrative Organization and Regulations	Navy Regulations, NavPers 10740-A	
2. Personnel Administration and Leadership	Education and Training, Part I, NavPers 10965-1 and Education and Training, Part II, NavPers 10966	

Subject	Correspondence Course Exemptions	School Exemption
3. Military Justice	*Military Justice in the Navy, NavPers 10993	U.S. Naval School, Naval Justice
Part II - Operations Area		
1. Bureau of Medicine and Surgery	Manual of the Medical Department, Part I, NavPers 10708	
2. Medico-Legal Matters - Misconduct and Line of Duty Suicide Insanity	** Legal Medicine Practices (available July 1957)	
3. Retirement and Compensations (for Reserve officers on active duty only)	Selected Readings a. Career Compensation Act, 1949 b. Naval Supplement to the Manual for Courts-Martial, Chapter IX c. Public Law 108, 81st Congress	
Part III - Technical Area		
1. Medicine, General	Clinical Laboratory Procedures, NavPers 10994 or Tropical Medicine in the Field or Special Clinical Services (Blood) NavPers 10998 or Frigid Zone Medical and Dental Practice, NavPers 10997 or	*Residency in Medicine or * Fellowship in the American College of Physicians or * Board Certification in Specialty

Subject	Correspondence Course Exemptions	School Exemption
	Submarine Medicine Practice, NavPers 10707 or Aviation Medicine Practice, NavPers 10912 or Pharmacy and Materia Medica, NavPers 10999	

Subjects in which exemptions will be required:

Fiscal Year in Which Selected	LCDR to CDR - Medical Corps, Inactive
1956	Any two subjects in the Executive Area
1957	All subjects in the Executive Area
1958	All subjects in the Executive Area plus one subject in the Operations Area
1959	All subjects in the Executive Area plus any two subjects in the Operations Area
1960	All subjects in the Executive and Operations Areas
1961 and Succeeding Years	All subjects in all Areas

Part I - Executive Area

Subject	Correspondence Course Exemptions	School Exemptions
1. Administrative Organization and Regulations	Navy Regulations, NavPers 10740-A *Organization for National Security, NavPers 10721	Armed Forces Staff College Naval War College (all courses - 10 months or more)
2. Personnel Administration and Leadership	Education and Training Part I, NavPers 10965-1 and Education and Training Part II, NavPers 10966	

Subject	Correspondence Course Exemptions	School Exemptions
	Personnel Administration NavPers 10968	
3. Military Justice	Military Justice in the Navy, NavPers 10993	*U.S. Naval School, Naval Justice
Part II - Operations Area		
1. Medico-Legal Matters - Misconduct and Line of Duty Suicide Insanity	** Legal Medicine Practices (available July 1957)	
2. Retirement and Compensations (for Reserve officers on active duty only)	Selected Readings: a. Career Compensation Act, 1949 b. Naval Supplement to the Manual for Courts Martial, Chapter IX c. Public Law 108, 81st Congress	
3. Logistics	Logistics, NavPers 10902-1 or Operational Planning and Staff Organization (Naval War College)	Naval War College (all courses - 10 months or more) Armed Forces Staff College

* Exemption for two grades
** Courses to be developed

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Medical Department Correspondence Course Withdrawn

The Medical Department Correspondence Course, Tropical Medicine in the Field, is withdrawn from circulation due to obsolescence of certain text material contained therein, and will not be reissued in its present form to new applicants. Since credit is allowed only for completion of the entire course

(Regular Naval officer and enlisted personnel and Naval Reserve enlisted personnel) or unit in the case of Naval Reserve officer personnel, all enrollees currently enrolled must complete course prior to 30 June 1957, in order to receive letters of satisfactory completion.

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PREVENTIVE MEDICINE SECTION

Poliomyelitis Vaccine

By the time this note is published, supplemental instructions extending the usage of poliomyelitis vaccine to age groups beyond the 0 through 14-year age span should be in the field. These instructions provide for the inclusion of military personnel in voluntary programs in certain areas.

The rather sudden improvement in the supply picture which has enabled promulgation of these new instructions has resulted from several factors.

Through the end of March, 1956, the quantities of vaccine which had been released each month had been only a small fraction of the amount which had been predicted for release according to manufacturers' production estimates. In early April, the picture was quite pessimistic and it appeared that the two-dose program for children 0 through 14 years of age would not be completed until next winter unless larger supplies of vaccine became available. During April, however, over 8 million cubic centimeters of vaccine were released. In May, over 9 million cubic centimeters were released, and the June releases promise to be even larger.

Another factor was the decreased requirements obtained from many field activities in May. Earlier requirements submitted to the Bureau of Medicine and Surgery from many activities had apparently been based on an estimate of total dependent children for which the activity was responsible instead of upon the number which had actually requested vaccine. When the new requirements were obtained in May, and confined to the amount of vaccine needed for completion of a two-dose program in registered eligibles, the total requirement was considerably reduced and it became apparent that some activities had received a surplus of vaccine over that required for those who had registered. This vaccine was immediately redistributed. Sufficient vaccine

to complete first doses was shipped during May; on June 7 instructions were given to the supply depots for shipment of sufficient vaccine to complete all second doses from supplies to become available during the month. As of this writing, it is believed that a two-dose program in all children 0 through 14 years and pregnant women should be completed prior to August.

In extending the vaccine to other age groups, it should be kept in mind that children continue to have first priority and no one over the age of 14 should receive the vaccine as long as children below the age of 14, who desire vaccination, remain unvaccinated. Medical officers should urge families containing children who are unvaccinated to have them vaccinated because there is now clear-cut evidence of the effectiveness of the vaccine in the prevention of paralytic poliomyelitis and as to the safety of the vaccine. Within the limits allowed by the new instructions, they should also urge others to take the vaccine. This is particularly true of the parents of young children and those ordered to, or stationed in, overseas areas of high endemicity of poliomyelitis.

Captain Robert S. Poos, MC USN, Officer in Charge of the Preventive Medicine Unit No. 6 in Hawaii, has analyzed the results of the vaccine program carried out during an epidemic among children and married adults in Pearl Harbor last fall. These results provide convincing evidence that administration of the vaccine under these conditions of high risk did not provoke paralysis in the recipients. These data have been presented before various professional groups, including the Annual Meeting of the American Medical Association, and will soon be published.

It is expected that the National Allocation Plan for poliomyelitis vaccine will terminate this fall and with it all restrictions on procurement and use of the vaccine. Preventive medicine officers of the Army, Navy, and Air Force are giving considerable thought to the eventual program to be followed in military personnel, but a final decision must await the experience of this coming summer. (Captain John R. Seal, MC USN, PrevMedDiv., BuMed)

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The Role of the Swimming Pool in the Transmission of Pharyngeal-Conjunctival Fever

An epidemic of pharyngeal-conjunctival fever in Washington, D. C., in 1954, was recently reported. The spread of this epidemic was largely associated with swimming pools, but direct transmission occurred readily in homes and in hospitals. From eye and throat washings, and stools from patients with the disease, the type 3 APC (adenoidal-pharyngeal-conjunctival) virus was readily isolated in tissue cultures.

In Toronto, in the first 6 months of 1955, about 20 patients with viral conjunctivitis were referred to one of the writers from the clinics of the

teaching hospitals of the University of Toronto, and from oculists in private practice in the Toronto area. These patients were adults and their symptoms consisted of a unilateral follicular conjunctivitis during the first 5 days, followed by involvement of the second eye in most instances. Enlargement and tenderness of the preauricular node on the affected side were variable, but could always be elicited when the node was palpated. About one-half of the patients developed corneal opacities in the affected eyes, and from washings from the conjunctival sacs of 7 of these patients, a cytopathogenic effect (CPE) was seen in tissue cultures of trypsinized monkey kidney or in HeLa cells. Three of these strains were sent to the virus laboratories of the National Institutes of Health in Bethesda, Md., and were identified as belonging to the type 3 APC group of viruses.

Commencing the first week of August 1955, children who had been swimming in pools were sent to the writers with a conjunctivitis similar to that which had been occurring in adults earlier in the year. The conjunctivitis was usually milder in children than in adults, but followed a similar course, occurring first in one eye and then in the second after a period of 3 to 5 days. In only a few instances were corneal opacities seen in children, and these disappeared within a few weeks. Pharyngitis and fever were present in most children with a temperature of 103° to 105° F., persisting for 4 or 5 days in many instances. Muscle pains were frequently complained of and catarrhal otitis media was a common complication.

The disease was obviously being transmitted in the swimming pools, and mothers on their own initiative kept their children away from the pools, with the result that the attendance at these centers was greatly reduced during the last 2 weeks of August.

At the present time, there are at least eight immunologically distinct types of APC virus, five of which (types 1, 2, 4, 5, and 6) have been recovered from adenoid and tonsil tissue. Type 8 is thought to be the cause of epidemic keratoconjunctivitis and type 3 the cause of epidemic pharyngeal-conjunctival fever. Types 2, 3, 4, and 6, when inoculated into the eyes of volunteers, have caused a follicular conjunctivitis.

In the present epidemic, washings have been taken from the eyes and throats of more than 50 patients, and virus studies are continuing. At this time, the nature of the disease closely resembles that which occurred in Washington, D. C., in 1954, and was caused by infection with the type 3 APC virus. The identification of three of the seven strains of virus isolated from adults in the spring of 1955 as type 3, further suggests that the swimming pool epidemic was due to this virus.

Transmission. Although the Toronto swimming pools were open throughout July, no cases of pharyngeal-conjunctival fever were brought to the writers' attention from June 15 until the first week of August. For the next 4 weeks children and adults with the disease were sent to them in increasing numbers from widely scattered areas of the city and province. In order to determine the importance of the swimming pool in the transmission of the disease, a

house-to-house survey was made by public health workers in a single area surrounding one of the school swimming pools. The results of this survey are shown in Table I.

Table I

Cases of Pharyngeal-Conjunctival Fever Occurring Within A Half-Mile Radius of a North Toronto Indoor Swimming Pool (August 1955)

Cases originating in pool (all Children).	74
Cases originating in pools elsewhere.	6
Cases originating from direct contact at home . . .	31
No history of swimming or contact at home	1
Total cases.	112

From this table, it will be seen that 74 of the patients within the area surveyed were children who have a history of having been in the swimming pool within 6 to 10 days of the onset of their symptoms. Only 6 children with the disease in this area gave a history of swimming in another pool or in lakes remote from this area. Thirty-one developed the disease at home from children who had previously contracted it in the swimming pool. In a number of homes, all members of the family, including the parents, contracted the disease.

Symptoms and Complications. Pharyngitis, fever, malaise, and muscle pains were complained of by most children. The conjunctivitis was sometimes absent or minimal in children, but was the main cause of discomfort in adults. Corneal opacities were seen with the slit lamp in many adult eyes, but were of rare occurrence in children. Adults seldom complained of a sore throat and none recalled any appreciable malaise or fever. Catarrhal otitis media was a common complication in children, 42 of the 104 in this area complaining of sore ears.

All manifestations of the disease were not present in every patient. However, atypical cases were included in the survey only when they occurred in homes in which other members of the family were suffering from this disease. As a consequence, many atypical cases may not have come to the writers' attention. The incidence of the disease, therefore, was probably

much higher than this survey indicates. (Ormsby, H. L., Aitchison, W. S., The Role of the Swimming Pool in Transmission of Pharyngeal-Conjunctival Fever: Canad. M. A. J., 73: 864, December 1, 1955; Abstracted in International Medical Digest, March 1956)

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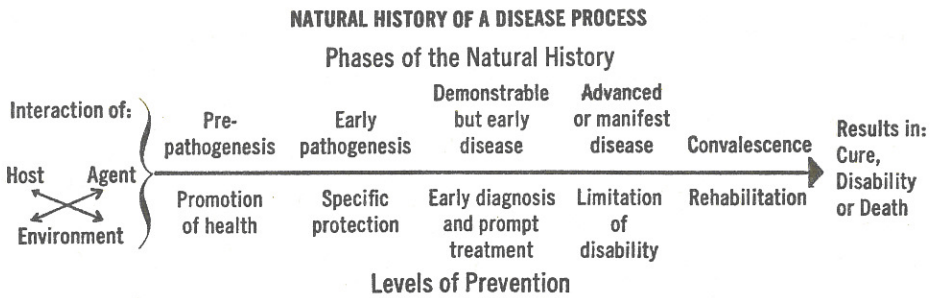
The Developing Field of Preventive Medicine

The word "prevent" may be used advantageously in its Elizabethan sense of "coming before" or looking ahead. The pediatrician using the term "anticipatory guidance" has the idea precisely. This approach to preventive medicine makes it possible to look at the natural history of any disease as a process that can be averted, interrupted, or delayed at various points in its evolution. The strategy of man's attack on a given disease depends on current knowledge of the means available to affect the natural history in a manner beneficial to man. We may think of the points at which the attack may be made as "levels of prevention" that parallel the developing natural history, as indicated in this diagram:



A number of extremely interesting advances in the approach to prevention have been made in recent years. Some of the most important ones relate to basic philosophy rather than to measures for dealing with individual diseases or disease groups. For example, epidemiologic methods have been carried over from the field of communicable disease control, where epidemiology won its first laurels, and are now proving equally useful in investigating the natural history of mental health, home accidents, nutritional problems, and other noncommunicable diseases. The concept of a single causative agent which held sway during the era of rapid advance in the microbiologic field is giving way to the idea of multiple causation, with renewed interest in the human host and the manner in which his resistance to disease is affected by such factors as endocrines, diet, and stress of various types. The sciences concerned with human behavior are extending our knowledge of the relationship of the socioeconomic environment to disease. Realization of the staggering problems long-term illness creates has led us to see the real value of dealing with disease, not always with the hope of complete cure, but with appreciation of the values of

	WIDELY APPLIED	READY FOR WIDER APPLICATION	FURTHER RESEARCH NEEDED
Environmental	Water purification Sewage treatment Milk pasteurization Rodent control Insect control Drainage	Stream pollution control Air pollution control Hygiene of housing	Methods of destroying parasites in human excreta that is to be used as fertilizer Insect resistance to DDT and other agents
Communicable Disease Control	Immunization, active and passive Antibiotics Antimalarial drugs B.C.G. (?) Polio-respirator and rehabilitation Antibiotics: Strep. infections, including rheumatic fever Meningitis Pneumonia Venereal and other diseases	Gamma globulin for control of infectious hepatitis Antibiotics for TB B.C.G. (?) Polio Vaccine	Control of upper respiratory viruses Microbial resistance to antibiotics B.C.G.; not yet adequately tested Polio Vaccine
Degenerative Diseases Heart disease Arthritis Diabetes Cancer		Methods of early diagnosis Multiple screening and other detection devices Periodic examination Control of obesity Control of known carcinogenic agents Rehabilitation Home care as an adjunct to the hospital Attention to social needs of the aged	Etiologic research Arteriosclerosis Hypertension Arthritis Cancer Relationship of physical activity and occupation to coronary diseases
Congenital Defects	Rh factor	Avoidance of overdose of oxygen to prevent retrolental fibroplasia Prevention of German measles during pregnancy Cardiac surgery	Further studies to show which congenital abnormalities may be acquired in intra-uterine life and how they may be prevented
Dental Caries		Fluoridation of public water supply Improved nutrition; high mineral intake in early stages of tooth development	Further etiologic research
Distribution of Medical Care	Prepayment	Group practice Regional organization of facilities and services Better facilities for care of long-term illness and for rehabilitation	Techniques for assessment of quality of care

	WIDELY APPLIED	READY FOR WIDER APPLICATION	FURTHER RESEARCH NEEDED
Accident Prevention	In industry Care of burns	Safe design: Engineering Education Enforcement Especially in home and on highway. "Protection for infants; education for older children"	Epidemiology
Mental Health	Shock therapy	Mental health principles Group therapy	Further etiologic research Field for use of tranquilizers and other new drugs.
Nutrition	Vitamins Concept of balanced diet	Return to wider use of iodized salt Obesity control	Relationship to degenerative disease Kwashiorkor
Industrial Health	Substitution of nontoxic materials Worker protective devices Local air exhaust at points of dangerous concentration of toxic materials	Mechanization of dangerous jobs	"Control" of new chemicals as they are introduced, including knowledge of their toxicology
Maternal and Child Health	Control of toxemia and puerperal sepsis Control of diarrhea and enteritis	Application of expanding knowledge of growth and development Anticipatory guidance Nutrition in pregnancy Prevention of abortion Wide use of contraceptive techniques now available	More satisfactory and more effective contraceptives Control of prematurity
Miscellaneous	Fractionation of blood	Rehabilitation Newer methods of artificial respiration Epidemiologic analysis of noncommunicable diseases Surgical "stockrooms" for body parts, e.g., "eye banks"	To minimize effects of stress

limitation of disability and of rehabilitation when, in our present state of knowledge, absolute "cure" is out of the question.

Recently, a group of people deeply interested in preventive medicine were asked to classify newer acquisitions to knowledge in the field under these three major headings:

(1) Major advances in research which have been widely applied in recent years.
(2) Important research developments which have great promise, but have not yet been applied widely.
(3) Important fields which must await further research before increase in applied activity is likely to be very profitable.

The accompanying tabulation, according to these three categories, was made of the suggestions of this group. It is not intended to give a completely comprehensive picture, obviously, yet it provides an interesting perspective on the developing field of preventive medicine. (Hugh R. Leavell, Professor of Public Health Practice, Harvard School of Public Health; The Developing Field of Preventive Medicine: International Forum, Abstracted in Therapeutic Notes: Parke, Davis and Company, 63: 134-136, May 1956)

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Course in Occupational Health for Naval Medical Officers and Civilian Physicians

A full-time 8-week comprehensive course in Occupational Medicine will be given in the Postgraduate Medical School, New York University-Bellevue Medical Center, 10 September through 2 November 1956.

Among the subjects offered to physicians are: organization and administration of an industrial medical department; preventive and constructive medicine in industry; occupational diseases; toxicology and industrial hygiene for the physician; biostatistics, communicable disease control and epidemiology. Opportunities will be provided for attendance at medical, surgical, and clinico-pathological conferences during the course.

Applications to attend this course should be submitted in accordance with either BuMed Instruction 1502.8 or Naval Civilian Personnel Instruction 230, whichever is appropriate.

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Editorial - Antibiotic Sensitivity Testing

There are three methods for the determination of antibiotic sensitivity in more or less general use: the broth serial dilution, the agar plate dilution, and the agar diffusion techniques. All three methods have their drawbacks...

Unfortunately, the method most widely used because of its simplicity—the agar diffusion method utilizing antibiotic sensitivity discs—is most susceptible to improper interpretation.

The antibiotic sensitivity disc method involves the placing of paper discs impregnated with antibiotic on the surface of an agar plate previously seeded with an organism isolated from the patient. Although these discs can be prepared in the laboratory, most of those in use today are commercial preparations. Several companies produce antibiotic sensitivity discs containing usually two or three different concentrations of each of the antibiotics. The concentrations used frequently are tabulated in Table I.

It is important to note in this table the differences in amount of antibiotic impregnated in each disc. For example, the broad-spectrum drugs—chloramphenicol, chlortetracycline, oxytetracycline, and tetracycline—are impregnated into the discs at concentrations of 5 micrograms, 10 micrograms, and 30 micrograms. In contrast, penicillin concentrations of 2.0 units (1.2 micrograms), 5.0 units (3.0 micrograms), and 10 units (6.0 micrograms) are used. The marked differences in the amounts of these antibiotics utilized in these discs are not related to differences in activity of the drugs involved, but to their diffusibility in agar media. Penicillin readily diffuses in agar, while the broad-spectrum antibiotics do not.

TABLE I

Final Concentration of Antibiotic per Disc

Bacitracin	2 u.*	10 u.	20 u.
Carbomycin	2 μg.*	5 μg.	15 μg.
Chloramphenicol	5 μg.	10 μg.	30 μg.
Chlortetracycline	5 μg.	10 μg.	30 μg.
Dihydrostreptomycin & streptomycin	2 μg.	10 μg.	100 μg.
Erythromycin	2 μg.	5 μg.	15 μg.
Neomycin	5 μg.	10 μg.	30 μg.
Oxytetracycline	5 μg.	10 μg.	30 μg.
Penicillin	2 u. (1.2 μg.)	5 u. (3.0 μg.)	10 u. (6.0 μg.)
Polymyxin B	5 u.	10 u.	30 u.
Tetracycline	5 μg.	10 μg.	30 μg.
Viomycin	2 μg.	10 μg.	100 μg.

* u. = units; μg. = micrograms

TABLE II

*Method of Classifying Broth Dilution Inhibitory Tests**

	Sensitive	Moderately sensitive	Resistant
Penicillin	<0.5 u.	0.5–1 u.	>10 u.
Tetracycline, Oxytetracycline, Chlortetracycline	<5 μg.	5–10 μg.	>10 μg.
Chloramphenicol	<15 μg.	15–25 μg.	>25 μg.

* Minimum inhibitory concentration is μg. or u./ml.

In the serial broth dilution test, organisms may be classified as sensitive, moderately sensitive, or resistant to penicillin and the broad-spectrum antibiotics following the protocol in Table II.

The concentrations of antibiotics used in the antibiotic sensitivity discs were arrived at by comparing the sensitivity of an organism in the serial dilution method, where the problem of diffusion in the medium is not involved, with the disc technique using several concentrations of the antibiotic under test. By such a comparison, it was found possible to place the results obtained with the antibiotic sensitivity disc method in categories similar to those described for the serial dilution technique. Thus, an organism is classified as follows:

Sensitive. Distinct zone of inhibition around disc of lowest concentration as well as zones around discs with the higher concentrations.

Moderately Sensitive. No zone of inhibition around disc of the lowest concentration. Distinct zones of inhibition around discs with the higher concentrations.

Slightly Sensitive. No zone around the two discs of lower concentrations. Definite zone around disc of highest concentration.

Resistant. No zones of inhibition around any disc.

Although the antibiotic sensitivity disc method is in no way quantitative, it does lend itself quite adequately to this classification. Attempts to use actual zone diameters in the classification of the sensitivity of an organism are dangerous and fraught with the possibility of misleading the physician, who, with certain types of infection, places considerable dependence on the reported sensitivity of the infecting organism. Thus, in chronic infections, such as osteomyelitis, subacute bacterial endocarditis, and urinary tract infections, determination of the sensitivity of an organism or the lack of it can be of major importance. On the other hand, sensitivity determinations in pneumococcal pneumonia, gonorrhea, and beta hemolytic streptococcal infections are in most cases unnecessary.

Recently, the author had an opportunity to review a large number of hospital reports of the sensitivity of a variety of routinely isolated organisms. In a large number of these records, zone diameters were used as criteria for reporting relative sensitivity to a variety of antibiotics. If all of the factors in the actual performance of the disc method were constant from day to day, it would be possible to attach some significance to zone sizes. This would be particularly true where there is a close liaison between the physician and the laboratory. This may also be true in those large hospitals where over a period of time a careful correlation has been made of the results of in vitro testing and those obtained in the patient. The fact is, however, that there are many variations in the in vitro tests that are difficult to control on a day-to-day basis. These include variations in the availability of nutrients in the agar medium, variations in pH, variations in the depth and concentration of agar medium, variation in size of the inoculum, and variation in the growth phase of the organism under test. In addition, it is important that the surface of the agar plate which has been seeded with the organisms under test be completely dry before adding the antibiotic disc. Surface fluid will dilute the antibiotic by leaching it out of the disc or cause the unwanted mixing with another antibiotic in an adjacent disc. All of these can materially affect the diffusibility of antibiotics in a solid medium. As an illustration of the diffusibility of two of the major antibiotics, it usually takes a final concentration of streptomycin per disc 10 times that of penicillin to give similar zones of inhibition against an organism equally sensitive to both drugs. The differences in diffusibility of the various useful antibiotics is emphasized in Table I. For example, it will be noted that, for the broad-spectrum antibiotics, the lowest concentration

used is 5 microgram/disc, while the lowest used for penicillin is 1.2 microgram/disc. This difference in concentration is not related to a discrepancy in antibacterial activity of the broad-spectrum antibiotics, but rather it represents a difference in diffusibility potential of these drugs.

It is generally accepted that tests for determining the susceptibility of microorganisms are valuable aids to the clinician. Further, the antibiotic sensitivity disc method, because of its simplicity, is probably the most widely used There seems to be no question that, provided this test is properly performed and the results intelligently interpreted, it is the most satisfactory method available for routine use. However, the analyst must recognize that the width of a zone around a medicated disc is a measure of the diffusibility of the antibiotic and not its potential antibacterial activity. (Welch, Henry, Editorial - Antibiotic Sensitivity Testing, Antibiotics and Chemotherapy, 6: 321-323, May 1956)

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